IN THE RECORDS OF THE
UNITED STATES PATENT & TRADEMARK OFFICE

Applicants again ask that you kindly change your records to reflect the attorney docket code as 60990005Z126. Another request for corrected filing receipt is attached.

REMARKS

Applicants thank Examiner James A. Thompson for having expressly withdrawn the previous § 102 and 103 rejections. Applicants note the new rejections based on the newly cited Curry patent.

Section 102 rejections

In the Official Action it is said that claim 37 is anticipated by Curry. In particular it is said that Curry teaches (emphasis added):

> "means for modifying a multi-column, multi-row numerical tabulation that forms a mapping between such input image data and such marks (halftone screen), to compensate for the measured colorant-deposition error (column 30, lines 32-37 of Curry)".

Thus the Official Action takes the position that Curry's "halftone screen" is the equivalent of the Applicants' numeri-

cal tabulation. The Action also argues that Curry's "halftone screen" furthermore can be modified, as Applicants' tabulation can be, to compensate for a complex of measured deposition errors. For the reasons set forth below, the Applicants respectfully traverse.

The Applicants' tabulation is modified to correct several different properties of colorant-deposition. Prominent among these properties is intensity of the various regions in each image.

Curry's halftone screen, however, is not capable of such modification. In fact the very passage cited in the Official Action, "column 30, lines 32-37 of Curry" — together with related passages in columns 28 and 30 — makes absolutely clear that Curry is referring to adjustments of positional signals, not to modification of tonal value signals, i. e. colorant intensities.

Throughout his patent, Curry explains that his system uses a predefined, preconstructed dot for each gray level, respectively. Curry's system is strictly amplitude modulated, and in fact is a very close analog to classical offset-lithography halftoning — except that Curry's dots are all preformed by action of programmed circuits, whereas classical offset-litho dots are each individually custom-formed photographically for each pixel of the input image "data" (typically a continuous-tone image).

Thus Curry's system is at least as remote as classical photographic halftoning is, from an array of image intensities that can be changed by modifying any preexisting numerical tabulation. Curry nowhere suggests modifying his halftone data structure to compensate for tonal-value imperfections of his printing system.

Actually, therefore, he is not able to compensate or correct colorant intensity in image regions by modifying an averaged compensation/correction of dots. Curry only changes how his halftone data structure is addressed, to guarantee that he achieves the original halftoning dot size and position. Although he comments that halftone data can be initially designed for different attributes, he nowhere proposes to modify those data in the printer.

Thus the Applicants respectfully submit that the character of the invention, as originally described and claimed, clearly distinguishes Curry. In the interest of advancing this case toward issue, however, the Applicants have now amended the claims to even more clearly emphasize these distinctions.

In particular, the subject claims now recite expressly that the kinds of colorant-deposition error being corrected by modifying the matrix include errors in image intensity. As explained above, Curry cannot answer to this recitation. The Applicants therefore ask that the Section 102 rejection be withdrawn.

Section 103 rejections

It is additionally said in the Official Action that all the claims in the application are obvious over Curry in view of various combinations with Koike. Typical of those rejections is the assertion, in the Action, that (emphasis added):

> "Curry and Koike are combinable because they are from the same field of endeavor, namely the control and correction of halftone printing and print-

heads. . . . [T]he multielement printing array taught by Koike is naturally adaptable to color printing . . . . Color printing is generally . . . a desirable capability for a printing system. Furthermore, using a large multi-element printing array, as taught by Koike would naturally speed up the printing of image data, thus improving the overall system taught by Curry. Therefore, it would have been obvious to combine Koike with Curry . . . ."

The Applicants submit, first, that substantially the same deficiency in the above-discussed § 102 citation of Curry is equally well applicable here. Accordingly the underlying basic reliance upon Curry is also inapposite in these § 103 rejections.

Applicants further submit, with greatest respect, that these characterizations in the Action are oversimplified and misleading. The "control and correction of halftone printing and printheads" is an extremely broad area encompassing many diverse technologies — many of which are mutually incompatible. That is precisely so as to Curry and Koike in the present case.

In particular, Curry's system is strictly amplitude modulated and its tonal values rigidly fixed. He suggests no way of using a halftone screen or any other kind of overall summary tabulation to modify the intensity or tonal values in a scene.

Koike on the other hand uses a kind of modulation that is almost universal for inkjet printing — sometimes called "stochastic modulation", or "frequency modulation" (FM), or it could be called "statistical modulation". That kind of modulation encompasses, among others, dither-based halftoning and error-diffusion halftoning.

The FM halftoning of Koike is incompatible with Curry, far beyond the sort of accommodation that is permissible when

combining references. In other words, it is understood that different parts of a combination-of-references need not come with perfectly matching interfaces — but in this case the fundamental character of the Curry or Koike invention would have to be grossly distorted, for their basic features to work together.

Thus Curry says that his invention is good for "any type of printing engine" that prints binary — but then he requires that it be a so-called "hyperacuity" type of printer. There is no suggestion in either reference of how to make an inkjet printer operate as a "hyperacuity" printer.

More specifically, Curry's unusual spinning-polygon laser deflector has an astonishingly high degree of placement precision — this is the primary thrust of Curry's entire patent. He repeats that its precision in line-art placement is ten to sixty times finer than his pixel resolution, and this is attributable to his polygon mechanism.

Furthermore he has a peculiar technique for recording line-placement to that amazingly fine precision. There is no showing that any inkjet printer will be able to duplicate the placement precision of Curry's polygon-apparatus, or accordingly make use of Curry's unusual recording technique.

An inkjet printer does not appear to be susceptible of the same kind of precision, to one-tenth or one-sixtieth of its pixel resolution, that Curry's "hyperacuity" system exhibits. Curry also declares that the human eye is capable of discerning placement precisions to that hyperfine level, but of seeing pixel resolutions only to the coarser or less-fine level of an ordinary pixel-based printer — and Curry asserts that the philosophy of his hyperacuity system is specifically to match what the eye can do.

That philosophy does not drive design of inkjet printers such as Koike's. To put it another way, inkjet systems are almost always required to print at their full addressable pixel resolution. In this environment Curry's idea is essentially useless: there is nowhere to which marks can be shifted, to improve their spatial precision, without leaving holes behind.

Yet another kind of incompatibility arises in the divergent mechanisms for changing grayscale levels. In inkjet work different numbers of dots are printed, with different patterns or sets of positions. In the present invention the number of dots and their positions are systematically changed after measuring printer performance in the field, specifically to compensate for incorrect or undesired density or size changes of the dots.

Laser printers and Curry use amplitude-modulated screening — in which dots are instead placed in extremely consistent locations, and dots of different sizes are selected to reproduce different gray levels. He makes such selections, however, only at the outset (i. e. in the apparatus-design stage) — not by manipulating later with a halftone matrix.

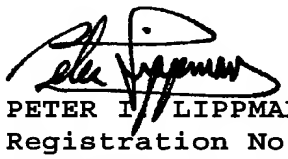
Thus the basic Curry citation is unable to reach the instant claims, now expressly reciting that the kinds of error which arise — and are corrected — include image intensity error. Further the combination of Curry with any conventional inkjet printer is a fundamentally incompatible and therefore inoperative combination. For these two reasons the Applicants ask that the Section 103 rejections, too, be withdrawn.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's favorable reconsideration and allowance of all the claims now standing in this case.

It is respectfully requested that, should there appear any further obstacle to allowance of the claims herein, the Examiner telephone the undersigned attorney to try to resolve the obstacle.

Respectfully submitted,



PETER I. LIPPMAN
Registration No. 22,835
Attorney for the Applicants

Law Office of Peter I. Lippman
licensed to practice California law only
17900 Mockingbird Drive
Reno, Nevada 89506

TELEPHONE:
775/677-8822

August 16, 2006